



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,990	09/04/2003	Jyh-Rong Sheu	SHEU3007/EM	4507
23364 7590 01/23/2008 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			EXAMINER LIN, JAMES	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 01/23/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/653,990	SHEU ET AL.	
	Examiner	Art Unit	
	Jimmy Lin	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. (WO 02/41348, references made are to the English equivalent U.S. Patent No. 7,161,285) in view of Sharp (U.S. Publication No. 2002/0124967).

Okamoto discloses a method of making a field emission cold cathode used in a flat display device such as a field emission display (FED), wherein an emitter is made from carbon nanotubes (CNTs) (col. 1, lines 6-15). An adhesive sheet 221 is brought into contact with a CNT film 212. Pressing of the sheet activates the adhesion and adhibits the sheet to the CNT film. The adhesive sheet is then lifted off to cause the CNTs on the surface to be pulled into an upright alignment state (col. 26, line 60-col. 27, line 15). This method increases the number of CNTs exposed on the FED (Fig. 17A-17C).

Okamoto does not explicitly teach that an activator is coated on the surface of the CNT film and that the adhesive sheet is coated on the activator. However, Sharp teaches that it was well known in the adhesive art to have applied an activator to a surface prior to applying a pressure-sensitive adhesive tape. The adhesive tape is then applied onto the activator [0005].

Because Sharp teaches that such methods were operable in the adhesive art, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied an activator to the CNT film of Okamoto and to have applied an adhesive sheet onto the activator with a reasonable expectation of success. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Okamoto does not explicitly teach that the method can increase the current density and intensity of the CNT emitter. However, the present specification seems to suggest that the density and intensity of the CNT layer is proportional to the number of CNTs exposed on the surface of the layer (pg. 2, lines 17-20). Because the method of Okamoto increases the number of exposed CNTs on the CNT film, the method would have necessarily increased the density and intensity of the CNT film.

Claim 7: The adhesive material is either organic or inorganic.

Claim 8: Okamoto teaches that a pressing machine can be used to press the adhesive sheet (col. 26, lines 64-67).

Claim 9: Okamoto teaches that the adhesive sheet sticks to the CNTs (Figs. 17A-17C).

Claim 10: Okamoto teaches that the CNT is set between a cathode plate 211 and a gate 216 in a triode structure (Fig 17).

4. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto '348 in view of Kobayashi et al. (U.S. Publication No. 2002/0006558).

Okamoto is discussed above, but does not explicitly teach that an activator is coated on the surface of the CNT film and that the adhesive sheet is coated on the activator. However, Kobayashi teaches that it was well known to have used a layer containing a release agent to aid the removal of a film [0254]. Because Okamoto teaches the need to remove the adhesive sheet and because Kobayashi teaches that the use of a release agent was operable to aid the removal of a film, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a layer having a release agent (i.e. an activator) onto the FED of Okamoto and to have applied an adhesive sheet onto the release agent with a reasonable expectation of success. The selection of something based on its known suitability for its intended use has been held to

Art Unit: 1792

support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 6: The activator is a release agent.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto '348 in view of O'Connor et al. (U.S. Publication No. 2002/0112961).


Okamoto is discussed above. Okamoto teaches that the adhesive sheet is pressure-sensitive rather than a heat-sensitive adhesive and, thus, does not explicitly teach heating the adhesive sheet for adhibitting the surface. However, O'Connor teaches that pressure-sensitive tapes and heat-activated tapes were operable equivalents [0072]. The teachings of O'Connor would have presented a recognition of equivalency in the prior art and would have presented strong evidence of obviousness in substituting one for the other in a process of selecting an operable adhesive tape. The substitution of equivalents requires no express suggestion. See MPEP 2144.06.II. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a heat-activated adhesive sheet, as opposed to a pressure-sensitive sheet, and to have heated the adhesive sheet for adhibitting the surface with a reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL
JL

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER